

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings of claims presented in the application:

1 (Currently amended). A process for synthesis of ultrafine rutile phase titanium dioxide particles through vapor phase hydrolysis of titanium tetrachloride comprising the steps of:

- (a) hydrolyzing a mixture of TiCl_4 and H_2O and a dopant in vapour phase in an aerosol reactor;
- (b) collecting amorphous or anatase titanium dioxide powder formed as dry powders;
and
- (c) calcining the dry powder to obtain rutile phase titanium dioxide,
wherein the amorphous particles of titanium dioxide are calcined at a temperature in the range of 150 to 400°C and for a period in the range of 1 to 4 hrs to generate rutile particles.

2 (Canceled).

3 (Original). A process as claimed in claim 1 wherein the dopant contains a carbon atom and is selected from the group consisting of an aliphatic alcohol, an aromatic hydrocarbon, and any mixture thereof.

4 (Original). A process as claimed in claim 3 wherein the dopant is ethanol.

5 (Original). A process as claimed in claim 1 wherein the molar concentration of the dopant is 1 to 10 based on the water vapour.

6 (Original). A process as claimed in claim 1 wherein the reaction mixture contains from 1 to 10% ethanol on a molar basis based on TiCl_4 .

7 (Original). A process as claimed in claim 1 wherein the flow rate of TiCl_4 is in the range of $10 \text{ cm}^3/\text{min}$ to $200 \text{ cm}^3/\text{min}$.

8 (Original). A process as claimed in claim 1 wherein the TiCl_4 vapor concentration inside the reactor is in the range of $7 \times 10^{-4} \text{ mol/min}$ to $1 \times 10^{-2} \text{ mol/min}$.

9 (Original). A process as claimed in claim 1 wherein the flow rate of water vapour is in the range of 240 to $1500 \text{ cm}^3/\text{min}$, preferably from 500 to $1000 \text{ cm}^3/\text{min}$.

10 (Currently amended). A process as claimed in claim 1 wherein the temperature at the exit of the aerosol reactor is maintained at less than 100°C ~~for obtaining titanium dioxide particles having anatase phase.~~

11 (Original). A process as claimed in claim 1 wherein the aerosol reactor is externally heated in order to avoid particle coating on the walls through thermophoresis.

12 (Original). A process as claimed in claim 1 wherein the aerosol reactor comprises of 3-tube concentric jet assembly wherein TiCl_4 is introduced into the innermost tube, dopant is introduced into the outermost tube and water vapor is introduced into the middle tube.

13 (Original). A process as claimed in claim 12 wherein the 3-tube assembly comprises a concentric arrangement of three inconel tubes at the entrance of the aerosol reactor.

14 (Original). A process as claimed in claim 12 wherein vapor phase TiCl_4 is introduced into a center tube of the three concentric inconel tubes.

15 (Original). A process as claimed in claim 1 wherein the vapor phase TiCl_4 is formed by bubbling an inert gas through TiCl_4 liquid.

